TELEPHONE ENGINEER

MANAGEMENT • ENGINEERING • MAINTENANCE

AUGUST 1935

COVER ILLUSTRATION
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MODERN TELEPHONE TRANSPORTATION

▼ ▼ ▼

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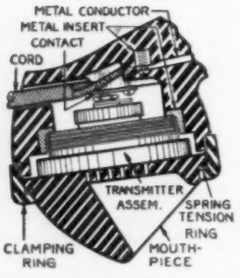
Modern Telephone Transportation

Overshadowing All Others - - -

STROMBERG-CARLSON GIVES YOU 40% GREATER COVERAGE



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30-DAY LIFE FOR READERS AND ADVERTISERS

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THE POLICY OF THE TELEPHONE INDUSTRY

"The most telephone service and the best at the least cost to the public. Telephone service free from imperfections, errors, delays and always at a cost as low as is consistent with financial safety."

• • •

THE TELEPHONE INDUSTRY in 1934—

- **Employed 300,000 persons.**
- **Paid $408,000,000 in salaries and wages.**
- **Paid $97,000,000 in taxes.**
- **Paid $184,000,000 in dividends to 750,000 stockholders.**

TOLL ADV

"Can you and Tom come up here for the week-end?"
USE your telephone to keep in touch with friends or family scattered on vacation ... to make reservations ... to extend or accept invitations. A telephone call gives pleasure and peace of mind. * After 7:00 P. M., you can talk to most points 75 miles away for 35c; 150 miles for 50c; 275 miles for 75c.*
Try it tonight.
"Just try to keep us away!"

TELEPHONE ENGINEER

MANAGEMENT -- ENGINEERING -- MAINTENANCE

AUGUST, 1935

Where Does It All Go?

UPON RECEIPT of a newspaper clipping stating that the Michigan Bell Telephone Co. will pay the State of Michigan in taxes this year a total of $3,594,000 or $7.26 per telephone; based on the average number of telephones the company operated in 1934, we recall an editorial we published last year calling attention to the fact that the Michigan Company paid enormous taxes amounting to $3,100,000 in 1934. The taxes to be paid this year is $1.00 more per telephone than those paid last year.

It is interesting to note that if taxes were paid through a meter, the telephone company would be required to stuff $6.83 into the slot every minute of every day of the year to pay its state taxes.

In addition to its state taxes, the telephone company will pay the federal government approximately $809,000 this year and its miscellaneous local taxes will approximate $47,000 —a grand total of $4,450,000.

Under the Michigan law, telephone and telegraph companies, railroads, railway car-loading companies and express companies pay taxes to the state, in lieu of local taxes, upon property generally used for conducting their businesses. The Michigan Bell Telephone Co. is the largest individual taxpayer in the utilities group.

Without further comment, except to say that it would be interesting to know to what use Bay State politicians will put this excessive and unreasonable amount of money and how much of it they will spend for the general welfare of the people of Michigan, we repeat a portion of the editorial published in the August, 1934, issue of TELEPHONE ENGINEER. Then, we said:

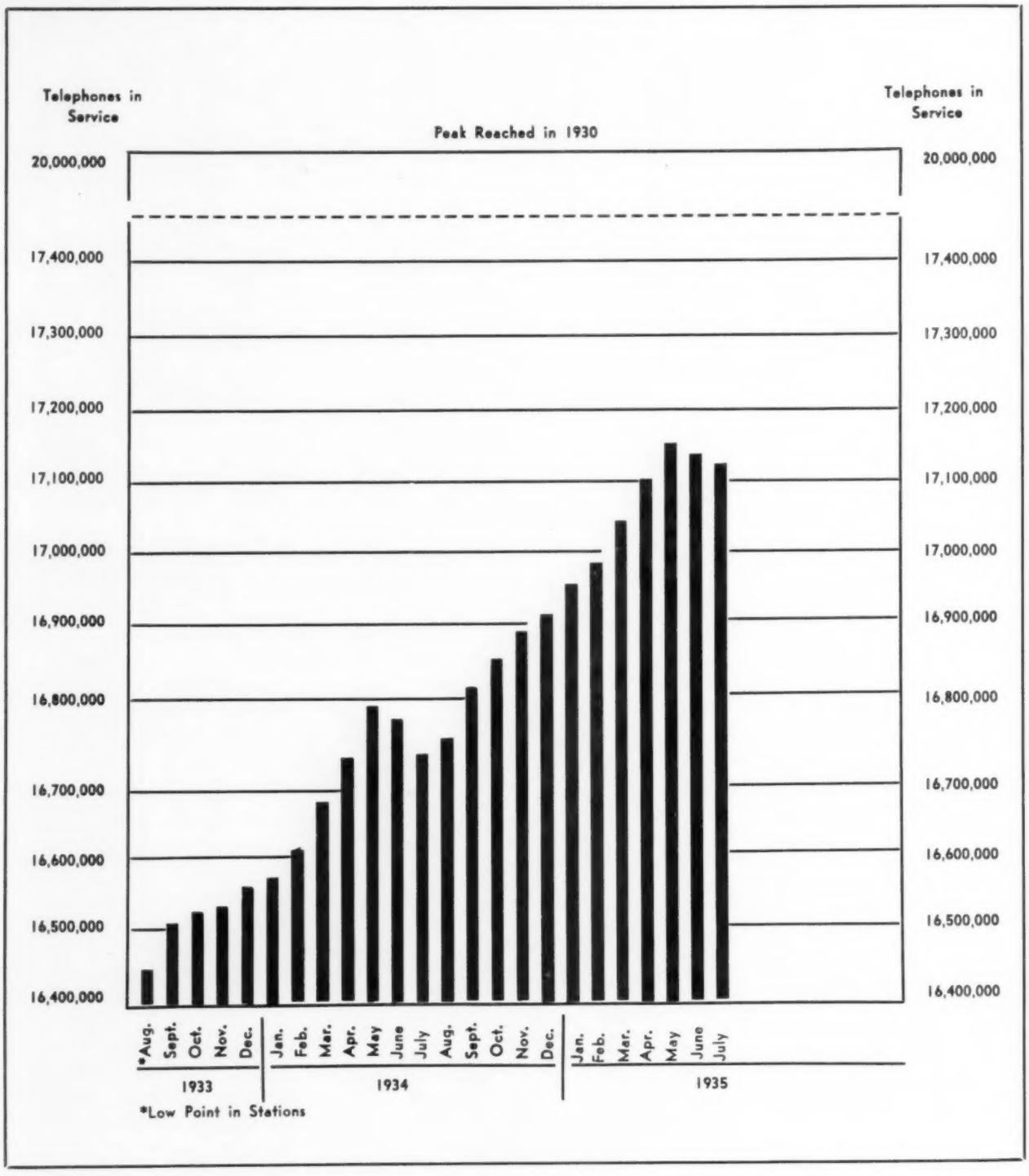
"The taxes assessed against telephone companies are increasing year by year to the point where their financial status is becoming precarious. And — yet parasite politicians and radicals are preaching and campaigning for lower telephone rates. How in the world they expect telephone companies to stay in business with continual increases in taxes is out of the realm of our understanding. There is no rhyme, reason or 'horse sense' to such a proposal.

"Telephone companies probably are, in the main, just like individuals — they don't mind being taxed if they were certain that their money was used legitimately and honestly to maintain government and for the upkeep of society in general.

"All in all, if those trying to run our city, state and federal governments would take a few lessons from the men who have guided the telephone industry safely and soundly through the depression, probably the governments would be on a sounder foundation and there wouldn't be the need for such exhorbitant taxes. Today subscribers asking for lower telephone rates might compare the service they get for the money they spend for telephones against the service they receive for their taxes. The former in many cases will outweigh the latter."

Service First — Always

Monthly Telephone Station Barometer



• "Tapping In" On Washington •

By
ROLAND C. DAVIES, Editor
Telecommunications Reports

THE recent order of the Federal Communications Commission, approving the experimental installation of the Coaxial Cable—with its revolutionary potentialities for the betterment of telephone facilities and use and for the transmission of television by wire for the first time—was so hedged about with restrictions that it may possibly precipitate an issue on how far a governmental regulatory agency may go in the dictation of the future operation and use of an invention by the telephone company which has sunk a substantial investment into the new device.

Two major phases of restriction were laid down by the Commission in its order. First, that even in its experimental stages the Federal body upon ten day's notice could institute a hearing which might amend or nullify its authorization for the use of the cable in its field trial period. Second that the cable during the experimental period should be thrown open to potential television users for tests of their apparatus either through agreement between the American Telephone and Telegraph Co. and the television concerns or through a mandate by the Commission in case an agreement cannot be reached and further that the telephone company cannot use the demonstration period for the development of television patents to the exclusion of other companies.

The Coaxial Cable is to be installed for experimental testing in actual field operations by the A. T. & T. and the New York Telephone Co. between New York and Philadelphia under present plans by next January 1. It is expected that the testing period will last two or more years before it is placed in commercial use. The cable presents revolutionary developments in telephony with the transmission of 240 simultaneous telephone conversations on a pair of coaxial conductors as compared to four on the present multiplex carrier current pair of wires. For television it holds out the prospect of nation-wide transmission of visual broadcasting on a scale similar to that being used by the broadcasting networks. The development and installation cost will amount to $580,000.

While the Commission's order contained the admonitions about the opening up of the cable to experimental use by television concerns—despite unequival assurances to the FCC by American Telephone and Telegraph Co. officials that the new invention would be available to all reputable television companies when the cable became available commercially—one can see merit in this ruling as indicating a desire by the federal agency to stimulate and push ahead the progress of this new art of visual broadcasting. Many feel that television may be a pioneer American industry, which may present a new frontier to build the nation's path out of the depression, just as the automobile industry did over a quarter of a century ago.

But the danger of opening wide the gates of the Coaxial Cable to all television concerns may contain two hazards. One is that the cable's visual transmission, of course, could only function well through the use of high standard equipment and, almost without exception, the companies with extensive research facilities are the ones which produce the highest type of equipment, such as Radio Corporation of America, Philco and the Farnsworth Laboratories which are now leading in television development. Then there is the fact that any new industry creates "fly-by-night" companies, seeking financial gain through securities' promotion and no such concerns in the future television field should be given carte blanche to use the advantages of the Coaxial Cable without the establishment of the reputability and soundness of the applying television company. The A. T. & T. should be given the right to pass upon the standard of television transmitting and receiving equipment to be used in the cable and the Commission should not assume an authority whereby it could actually force the telephone company to open up its facility to companies which do not fulfill such requirements.

The ruling on both the use of the cable for television and on the provision to amend or nullify the authorization after a 10-day notice and a hearing, of course, can be exercised with discretion and wisdom by the FCC so that no burdensome hazards or regulations would be imposed upon the telephone company. It is most likely that such a procedure would be followed by the federal body, because the Coaxial Cable holds such promise of remarkable progress in the art of communications as to obviate any attempt to block its full development. However, the tenor of the restrictions did seem to give rise to a question of the scope of governmental authority in regulating the use of a new invention during its experimental and trial period.

• ● •

Language of Order . . .

In its findings and order, the Commission declared that it "finds the experiment . . . . is necessary for the advancement and improvement of communication and communication facilities, practice and service; that the petitioners (A. T. & T. and New York Telephone Co.) propose to carry on the experiment at their own expense and without cost to the public. . . . That experimentation, such as that proposed, should be encouraged for the public welfare and in the public interest. The record indicates, and the Commission finds, that the introduction of the Coaxial Cable would have a tendency to reduce rates for services rendered by use of such cable.

"The Commission finds that during the experimental stage of the Coaxial Cable parties interested in the transmission of television images should have access to and the use of the said cable for the use of experiments for themselves, provided the petitioners and such other parties may agree upon terms and conditions. . . . and in case the petitioners and other parties may agree upon terms and conditions and in case the petitioners and other parties cannot agree upon such terms and conditions, such other parties may apply to the Commission for rules and whereby they may have access to and the use of said coaxial cable for their proper purposes and uses; and the Commission finds that under these circumstances the Coaxial Cable in its demonstration period cannot be used by the petitioners for the development of the right to television patents, to the exclusion of other parties having access to the Coaxial Cable; . . . and under the circumstances the Commission is of the opinion that the petition-

ers cannot monopolize the experimental advantages, features, and uses of the Coaxial Cable to the disadvantage exclusion and deteriment of other parties.

"The Commission at this time is not going into the accounting, and engineering features of the project for the reason that it does not want to jeopardize the public interest by specifying, and thus limiting, requirements which the Commission has the authority and right to impose upon the petitioners, when the proper time arrives . . . . and the Commission hereby asserts its right to make any other and further order, whether supplemental to and derogatory of the order being issued and the Commission hereby serves notice that it reserves the right to revoke the order about to be issued either in whole or in part after hearing upon 10 days' notice to the petitioners." The order continued that the Commission required the express acceptance of the order and findings by the telephone companies and that the companies should furnish the FCC monthly reports on the progress and activities in connection with the cable.

Ten days prior to the issuance of the Commission's order on Coaxial Cable the full Commission had spent a complete day listening to a highly informative and interesting exposition of the cable, given at a hearing by Dr. Frank B. Jewett, president of the Bell Telephone Laboratories and vice president of the American Telephone and Telephone Co. Dr. Jewett had traced—and had held the full attention of the Commissioners— the progress in the art of telephony during the past quarter century and told how the cable had been developed. He cited that the Coaxial Cable held promise of being the long distance facility of the nation during the next few years. Television seemed to attract the interest of the Commissioners during his testimony and he related the possibilities of the cable in this field. The Bell Laboratories head said that the A. T. & T. was willing to offer the use of the cable for television to any reputable company and in no way was interested in creating a monopoly for itself in that sphere. The hearing was featured by the withdrawal of any opposition to the experimental installation by the two leading telegraph companies and by the radio broadcasting industry and the only attack came from a spokesman representing a group of independent motion picture producers, who expressed fear of the effect of television upon the film industry.

• ● •

Construction Approval Evolved . . .

The Telephone Division has evolved a standard form for the authorization of the construction of telephone lines out of a trio of applications for such work which has been presented to it during the past year. The latest application was filed by the Intermountain Telephone Co. for the building of an 18-mile toll line in Virginia.

In brief, the form, which apparently will serve as the standard for future FCC actions, orders the keeping of complete cost records, the filing with the Commission of a final report on the costs and allocation of the costs to the various accounts and companies 60 days after completion of the project and the stipulation that the FCC in granting such authorizations reserves the right to disapprove any cost allocation and by its construction orders does issue an approval of the investment.

• ● •

Rules For Tariff Filing . . .

In the formulation of its regulations on the filing of tariffs by telephone and other communications carriers, the FCC has exhibited a whole-hearted desire to make these rules as workable as possible and to devise them so they would cause the least possible burden of expense upon the companies. The latest revision will postpone until January 1 the promulgation of any ruling on the posting of tariffs in telephone company offices—a question which had aroused considerable discussion as to its most efficacious method of handling. The effective date of the tariff rules is September 1.

The telephone companies have been given several opportunities to submit their views and suggestions of revisions of the tariff rules since the hearing on these regulations last June. Telephone Division Chairman Paul A. Walker, who presided at this hearing, announced that the companies would be given every chance to make these regulations as efficient as possible and has endeavored to have this purpose carried out to its fullest extent.

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Correction . . .

In the July column of "Tapping In On Washington" a typographical error occurred in the quotation of an excerpt from the special concurring opinion of Commissioner Paul A. Walker on the interlocking directorships and offices. The quotation should have read: "No doubt the Congress had in mind some attempt to subject these concerns to the control of the laws of the country." The column had read: "No Congress had in mind, etc." This error and misquotation is regretted.

Likes Burden and Blain

"I am sure you receive every day a certain number of letters, telling you how **Telephone Engineer** is appreciated. Having received this publication for two years, I am now sending my appreciation and congratulations to you, for making such a magazine possible.

"I am a young student in the field of communications and am trying to learn everything possible about. . . . I greatly appreciate the articles in **Telephone Engineer** by B. C. Burden on "Basic Telephone Electrical Theory" and "Line and Desk" by Ray Blain, besides the very timely articles that appear from time to time."

Herbert C. Evans.

THE FRONT COVER

It is a progressive telephone company that has up-to-date equipment for the construction and maintenance of its properties.

The illustration on the front cover shows a modern, light truck body recently purchased by a telephone company for installation and maintenance work. Any company desiring information on truck bodies may write to TELEPHONE ENGINEER for source of supply.

Transfer Assets of Associated Utilities

Reorganization of Associated Telephone Utilities Co., previously approved by the court, has been carried out with the transfer of all its assets to the successor General Telephone Co. and its subsidiary General Telephone Allied Corp. William J. Wardall, trustee in reorganization of the old company will head its successor as president pending stockholders vote on management at a meeting expected to be held in the early Fall.

New securities issuable under the plan are ready for distribution. Creditors are being notified to release their claims, and holders of notes, debentures, stock and certificates of deposit are being notified to transmit their securities to the Bankers Trust Company, New York, through which exchange will be affected.

Copies of letters of transmittal are being mailed to all known holders of securities. Additional copies may be obtained from the Bankers Trust Co.

MODERN Telephone REPEATERS

● Up-to-date telephone repeaters changes poor transmission to good at a saving to the telephone company. Modern repeaters designed for use by telephone industry, railroads, pipe line companies, power companies.

By
RAY BLAIN

TELEPHONE men all realize the importance of good transmission but few know how easy it often is to change from poor to good simply by the addition of a modern telephone repeater. Neither does the average telephone man realize that a good reliable repeater which will operate almost indefinitely without attention and obtains its operating current from 110-115 volt 60-cycle, single phase, alternating current, can be purchased at a very reasonable cost. These repeaters are designed with the intention of filling the needs of Independent telephone companies. railroads, pipe line companies, power companies and other users of long line communication.

With this modern repeater results are always positive and a gain equivalent to 15.5 miles of No. 19 gauge cable, or 8.3 miles of No. 22 gauge cable is obtained in a circuit of 157 miles of .104 copper. This means that on a call from Chicago to Indianapolis transmission would be equal to that obtained on a local call. These figures would be altered somewhat by varied conditions, but the illustration of how the repeater eats up distance is correct. Additional repeaters may be added at intermediate points along the line to extend the circuit a greater distance with its perfect transmission.

Not only does the modern repeater produce more volume and power, it actually improves the tone of the voice by eliminating noise and distortion arising from other sources. The new repeater is designed with particular attention to tone and articulation. Most telephone equipment, especially cable, offers greater loss to high frequencies and higher tones. For that reason the new repeater is designed to amplify the higher tones more. All frequencies below 160 cycles have been suppressed in order to eliminate power line induction, that ever common source of disturbance.

Exhaustive tests have proved that frequencies below 200 cycles are responsible for only about two per cent of articulation, but create the greatest source of noise, that is, 60-cycle induction and its first and second harmonics, 120 cycles and 180 cycles. Therefore the new repeaters are designed to produce little gain below 200 cycles. Similarly there is only 15 per cent of all articulation above 3000 cycles, and the repeater gain is permitted to fall rapidly beyond that point. It can readily be seen that the greatest amplification, 20 db's, occurs at 2200 cycles while the average is approximately 15 db's or the 1000 cycle value. The purpose of this greater amplification at higher frequencies is to compensate in the repeater for the lower efficiency and greater losses in other equipment and in cables at these higher frequencies.

A similar response curve for the modern repeater on an average circuit, including transmitters and receivers, is practically a straight line from 300 cycles to 3000 cycles, clearly showing why the tone quality of the circuit is improved by the addition of the repeater. Furthermore, the voice volume is increased by bringing up the higher tones, normally suppressed by other apparatus, so that the gain is even more apparent to the ear than is indicated by the curve. Any improvement in tone or articulation naturally makes the speech more understandable, even without increased volume. The reduction in noise level and distortion from sources below 200 cycles is responsible for a further improvement in articulation which is most important to the ear of the listener although not apparent in charts and figures.

The operation of the modern repeater is remarkably stable and the operator has no control over the repeater gain, hence errors from that source are eliminated. I remember well the first, so called vacuum tube repeater which I maintained down south over 20 years ago. It made use of the exchange storage battery through a resistance to light the tube filaments. and used a large bank of No. 6 dry cells on the plates and small flash light cells for a grid bias. These dry cells were a constant source of noise trouble and required frequent replacement. The tubes would also get noisy and had a comparatively short life. This was a cord circuit type repeater and the operator used a four-position key to control the gain. This key was usually set on the third position as the repeater would "sing" on the fourth position with most of our circuit combinations. Often the operator would set-up the repeater with the gain key on the third position and go off the line and get busy on another call and the repeater would start "singing" and a lot of long haul circuit time would be lost. Due to the stable operation of the modern repeater it may be used satisfactorily on dispatching circuits and others having branch and intermediate stations, where the old style repeaters were never satisfactory. On a heavy dispatchers circuit the network of each end of the repeater is readily balanced against the normal line with all bridged stations idle but the repeater must remain stable with the maximum number of receivers "off the hook." This condition demands a compromise balance and usually requires that the gain of the repeater be reduced to make the adjustment less critical.

Repeaters and power units contain no moving parts other than a single relay of standard design. The tubes are of standard radio type, can be tested in the usual manner and replaced from standard stock. Assurance against interruptions of service by reason of power failure of the commercial current, is provided by a change-over relay which automatically changes the repeater from the alternating current power unit to batteries. Commercial current has become so dependable that emergency battery supply is seldom considered necesasry in the average telephone exchange. Long tube life is assured in the modern telephone repeater by their operation at an average filament voltage well under the manufacturer's normal rating. The A. C. power consumption of one modern telephone repeater, including power

(*Please turn to page 32*)

BASIC Telephone Electrical THEORY

● Part X of Mr. Burden's article dealing with basic theory of electrical engineering as applied to the telephone field discusses series and parallel resonance.

By
B. C. BURDEN
Transmission Engineer
Lincoln (Neb.) Tel. & Tel. Co.

X

WE have been told in preceeding paragraphs that if the inductive reactance of a series circuit is equal to the capacity reactance that these two reactances will neutralize each other and the current which will flow in such a circuit will be limited by only the resistance of the circuit. When X_L exactly equals X_C in an AC series circuit, the circuit is said to be *resonance*. Figure 28 illustrates the relations in a series circuit which is in *resonance*.

A number of interesting facts may be noted in connection with resonance effects in a series circuit. The most interesting is the fact that the voltage across the capacity and the voltage across the inductance may be many times the impressed voltage.

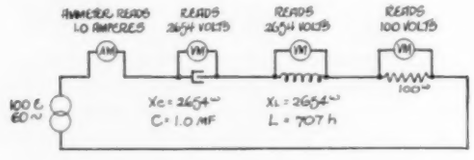


Fig. 28. Relations in a series circuit in resonance.

In the series resonant circuit shown in Fig. 28 it will be noted that the voltage across the inductive and capacity reactances respectively is 2654 volts, whereas the impressed voltage is only 100 volts. The reason for this rather unusual condition will be obvious if the fact be considered that the current flowing in the series circuit is quite high (limited only by the resistance) when $X_C = X_L$ and inasmuch as this current flows through both X_C and X_L a high IX_C and IX_L will be set up. It should be noted, however, that the voltage across the inductance is 180° out of phase with that across the reactance; hence, the actual net voltage across the combinations at resonance will be zero inasmuch as $X_C = X_L$ under this condition.

It will also be noted that the maximum current which will flow in a series circuit is definitely limited by the resistance of the circuit; hence, if we wish to take advantage of *resonance effects* to produce a high current flow in an AC circuit we must keep the resistance as low as possible.

In working with AC circuits, especially radio circuits, we often wish to know at what frequency an inductance and capacity will resonate. This can easily be computed by means of the following equation:

$$f_r = \frac{1}{2\pi\sqrt{LC}}$$

Where: f = resonant frequency in cycles
L = inductance in henries
C = capacity in farads
$\pi = 3.1416$ (a constant).

If an inductance and capacity are placed in parallel, we may have at some critical frequency a condition known as *parallel resonance*. The conditions under which parallel resonance takes place are the same as for series resonance; viz, that $X_C = X_L$ at the resonant frequency.

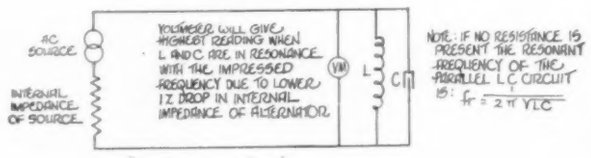

AC SOURCE
INTERNAL IMPEDANCE OF SOURCE
VOLTMETER WILL GIVE HIGHEST READING WHEN L AND C ARE IN RESONANCE WITH THE IMPRESSED FREQUENCY DUE TO LOWER IZ DROP IN INTERNAL IMPEDANCE OF ALTERNATOR
VM
L
C
NOTE: IF NO RESISTANCE IS PRESENT THE RESONANT FREQUENCY OF THE PARALLEL L C CIRCUIT IS: fr = 1/2π√LC

Fig. 29. Relations in a parallel circuit with resonance.

Figure 29 illustrates the action in a parallel resonant circuit.

In this type of circuit the action, it will be noted, is just the opposite from that in a series resonant circuit. When the circuit is resonant the current flowing to the inductance and capacity is a minimum, and if the parallel circuit consists of a pure inductance and pure capacity, will be zero. This is equivalent to saying that the impedance of the combination of inductance and capacity in parallel is infinity at the resonant frequency.

If resistance is present in a circuit containing inductance and capacity in parallel the resonant frequency is changed from what it would be were the resistance not present. If the resistance present be in series with the inductance as shown in Fig. 30 then the resonant frequency is equal to:

$$f_r = \frac{\sqrt{1 + 2R^2 - \frac{C}{L}\left(\frac{R}{L}\right)^2}}{2\pi\sqrt{LC}}$$

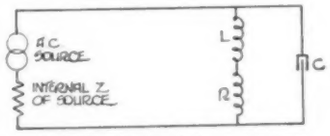


Fig. 30. Parallel resonant circuit containing resistance.

It will be seen that the above equation for parallel resonance is much more involved than is the equation for series resonance. For most practical purposes the similar equation is satisfactory.

In the power field resonant effects are generally to be avoided as in the event of equipment becoming resonant (series resonance) this would be apt to cause abnormal voltages to be developed which would result in insulation breakdown in the equipment.

It can be seen from Figure 28 that the voltages across equipment which is in resonance might be many times the line voltage. In the communication field resonance effects are often made use of especially in circuits which are intended to be selective to some specified frequency. A radio set is a good example of parallel resonance as this principle is utilized in practically all present day radios in selecting the desired station from the many stations on the air. Figure 31 shows how the principle of parallel resonance is applied to radio sets.

In this application when L_1 and C_1 are adjusted to the incoming frequency the maximum voltage is developed across the grid input circuit.

We have thus far studied only single phase alternating current, let us next consider multi-phase alternating current.

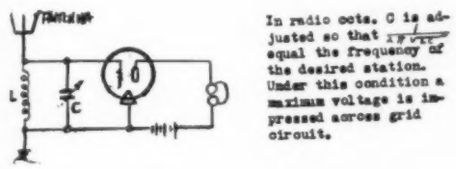


Fig. 31. Principle of parallel resonance as applied to radio circuits.

For several different reasons it is customary to generate and distribute electrical power of the two phase and three phase type. The principal difference between single phase alternating current and multi-phase alternating current is the fact that one or more additional wires are required over those used in a single phase system. and that the voltage across any combination of two wires and that across any other combination of two wires in a multi-phase system will be out of phase by some specified number of degrees.

Figure 32 illustrates how two phase alternating current might be generated by means of two separate alternators mechanically coupled together and with the armatures displaced 90° from each other.

It is obvious from an inspection of the sine curves of the two alternators that the voltages or currents across the two wires of one alternator would always be 90° out of phase with the voltages or currents in the other alternator and that four wires would be required to distribute the power from such an arrangement. It would not be necessary to have two separate alternators to generate a two phase current as this could be accomplished by having separate windings on the same alternator with the windings displaced 90° from each other, as shown in Figure 33.

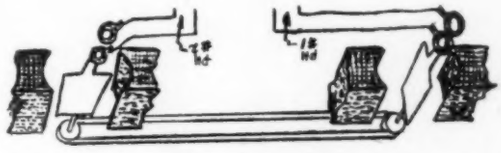


Fig. 32. Generation of two phase AC by means of two single phase alternators.

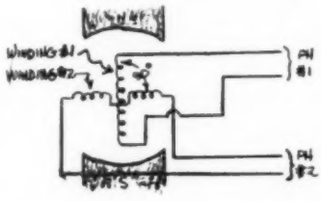
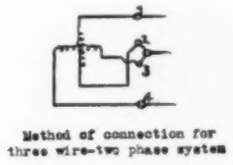


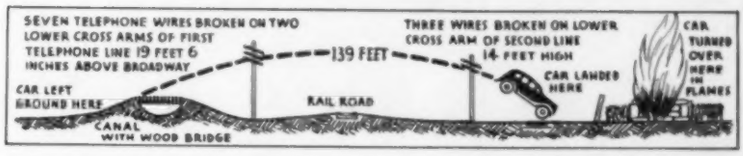
Fig. 33. Generation of two phase AC by single generator.



It would also be feasible to connect wires 2 and 3 of the windings of the alternator shown in Figure 33 together and use one wire as a common and thus distribute two phase power from three wires. However, in this case it will be noted that the voltage across wires 1 and 4 will be equal to the square root of 2 times the voltage across wires 1 and 2 or wires 3 and 4. This is due to the vector relations between the voltages of the two windings.

(To Be Continued)

Hop, Skip and Jump


SEVEN TELEPHONE WIRES BROKEN ON TWO LOWER CROSS ARMS OF FIRST TELEPHONE LINE 19 FEET 6 INCHES ABOVE BROADWAY
139 FEET
THREE WIRES BROKEN ON LOWER CROSS ARM OF SECOND LINE 14 FEET HIGH
CAR LANDED HERE
CAR TURNED OVER HERE IN FLAMES
CAR LEFT GROUND HERE
RAIL ROAD
CANAL WITH WOOD BRIDGE

The above sketch illustrates an unusual automobile accident that occurred near Harlingen, Tex., recently. Leaving the highway at the peak of the canal embankment, the auto took to the air, ripped several wires from the two lower cross arms of the telephone toll lead; sailed on across the railroad and took three wires from out the telegraph company's lead and landed top side up in the road 139 feet from where it took off. The car turned over shortly after coming to earth and burst into flames. The five occupants of the machine escaped with only minor injuries.

A Correction

It is regretted that an error was made in the July installment of Mr. Burden's article on "Basic Telephone Electrical Theory." The paragraph at the top of Column Two, Page 16 of the July issue should have read "A rectangular vector expression consists in showing an impedance in terms of its R and X components; i. e., $Z\angle\varnothing = R + J\ X$. The symbol (J) used to indicate that the quantity X is 90° out of phase with the quantity R; hence cannot be added directly (numerically) to R, but must be added vectorially."

Trade Journals

President Oscar Burton urged, in his address at the last Texas convention, consistent reading of telephone trade journals. Texas Telephone Topics called attention to this suggestion and emphasized the importance of keeping abreast of the times through the columns of telephone trade journals of this country.

Telephone Topics pointed out that the journals have recently improved the general tone of their publications. Each and every edition is filled with interesting text matter well prepared and printed on good paper. Many of the larger companies are purchasing the publications on group subscription plans having a copy mailed to each office they operate; which is convincing proof of the value of the journals, the Texas telephone bulletin said.

200 CONVERSATIONS Over a SINGLE Circuit

● New Coaxial Cable, Bell Laboratories development, may also be used for television transmission—experimental installation between New York and Philadelphia approved by FCC.

THE NEW type of cable system, of which the American Telephone and Telegraph Company plans to make an experimental installation between New York and Philadelphia, as announced in a recent petition to the Federal Communications Commission, represents a radically new development. It employs a new type of cable circuit known as a "coaxial" circuit, and embodies a number of other unique features, such as new types of repeater and terminal apparatus, all of which are developments of the Bell Telephone Laboratories. The system is capable of transmitting a band of frequencies about a million cycles in width and of utilizing this band either for a large number of telephone or telegraph circuits or for television transmission.

Progress in the Laboratories on this development has reached the point where it is deemed advisable to carry out an actual installation in the field in order to obtain experience with such practical problems as cannot be explored in the laboratory. Thus the telephone company is preparing to make this new type of system available for future public use either for telephone and other message services, or for television transmission. Television circuits provided by systems of this type might be used, for example, in connecting together television broadcasting stations in the different cities in much the same way that telephone lines are now used for interconnecting the radio stations which broadcast sound programs. The future commercial application of systems of this type will depend upon a great many factors, including the demand for large groups of additional communication facilities or for circuits for transmitting television, and will necessarily be a gradual process.

This recent development of the Bell Telephone Laboratories makes it possible to transmit some 200 or more telephone conversations over a single circuit formed of two coaxial conductors. This contrasts with the four telephone conversations which can be transmitted over a single open-wire circuit with the aid of the carrier current multiplex systems now in use on many long distance routes. The new system also makes possible for the first time the transmission over a cable type of circuit of television images of good definition.

THE COAXIAL CABLE

A cable of this type will be installed experimentally between New York and Philadelphia. It contains two high-frequency channels, one for use in in each direction, and two "quads" of ordinary, paper-insulated conductors, for control and signaling circuits.

Each coaxial circuit consists of an outer copper conductor in the form of a tube, within which a copper wire is supported by a series of rubber disc insulators, the intervening space being filled with air or nitrogen gas. Besides acting as a conductor the outer tube serves to shield the transmission path from undesirable external electrical influences. In the New York-Philadelphia installation a lead sheath cable of seven-eights-inch diameter will be placed in existing cable ducts. This cable will contain two coaxial circuits, one for either direction of transmission, these being supplemented by eight paper insulated wires of the type now used in telephone cables.

The repeaters which are used to overcome transmission loss or attenuation will be placed approximately 10 miles apart. There will be at each point only a single repeater, this being capable of amplifying the entire group of 200 or more telephone channels or the single television circuit. The repeaters will be remarkably stable and free from distortion effects. A novel feature is that most of them will not be placed in buildings as is the present practice but will be mounted in or near the cable manholes where they will function for long periods of time without attention.

It is hoped that the various parts of this experimental cable system will be in place by the first part of 1936. Tests under actual operating conditions will be made when the installation is completed. It is estimated that the total cost of the installation will be about $580,000. **—Bell Telephone News.**

Approved By FCC

The Federal Communications Commission on July 24, authorized starting of experimental installation of the new coaxial cable, after holding a hearing, attended by telephone, telegraph and motion picture executives.

The TELEPHONE and Your GROCERS

EVIDENCE of the value of cooperations by telephone companies can be seen each month in the *Indiana Food Merchant*, official publication of the Indiana Retail Grocers and Meat Dealers Association, Inc. Appearing therein is a series of articles stressing the value and importance of the telephone in the food merchant's business and urging its greater use. These articles are the direct result of the proper cooperation on the part of The Home Telephone and Telegraph Co., Fort Wayne, Indiana, with this association.

The appearance of these articles in a magazine read by 75 per cent of all the retail food merchants in Indiana can be attributed to a desire on the part of Charles J. Steiss, state secretary of the organization, and editor of the *Food Merchant*, to publish material not only interesting but that which will aid in increasing each merchant's business.

When the first article seemed to call for another a series of informative stories concerning the real value and proper use of the telephone in the grocery or meat market of today was arranged.

The articles published by the *Food Merchant*, reprinted below should be studied closely by all telephone operating men and then they should canvass all grocery stores and meat markets in their communities and present the data to local merchants and persuade them to use the telephone for soliciting business. An increased use of the telephone would eventually lead to increased telephone rentals.

Following are four of a series of articles published by the *Indiana Food Merchant*:

MULTIPLY YOURSELF WITH THE TELEPHONE

Many food merchants are finding it very beneficial to contact their customers over the telephone on a regular schedule. These contacts are made during quiet periods in the store. If an order is received it can be prepared during that quiet period. In this way the merchant can eliminate much of the delay caused customers who call either by telephone or personally at the store during the busy hours. He has in a sense multiplied himself.

Contacting by telephone, if done politely, certainly cannot cause anything but good feeling on the part of the customer. If the person called is asked to set a time for regular calls in the future there cannot help but be a growing appreciatoin of this service.

During busy periods in the average merchant's day, when there is frequently a desire and even a need for doing several things at the same time, the question of whether or not he can multiply himself never enters his mind. Physically, it is obvious that he cannot; yet in a sense it is very possible.

A telephone instrument on the shelf or counter provides the merchant with an opportunity to be two places at the same time, which must be multiplication in somebody's arithmetic.

To merchants without telephone service, the frank suggestion is offered that they check themselves conscientiously on the efficiency of their store. Many merchants would rather lock a front door entrance to their store than remove the telephone service within. There must be a reason. Merchants with service should check to determine whether they have sufficient service . . . enough trunk lines and extension telephones where needed. The economy

practiced with telephone service is frequently very expensive.

Business today depends greatly upon the telephone. Proper use of it should help every business and the food merchant is no exception. He can, it would appear, make very efficient use of telephone service. The use of this service need not be local, either. It is possible to be in widely separated places at the same time by long distance telephone. Long distance wires everywhere make this kind of multiplication the answer to problems that early mathematicians never dreamed could be solved.

MOST VALUED CUSTOMERS

Recent issues of the Indiana Food Merchant have carried brief articles on the importance of the telephone in any merchant's business. Already we have received a number of comments from our readers. Several of these comments have been accompanied by suggestions. Well, these articles have had the same effect upon us. They have proven doorways to additional thoughts. Now we are promising you further articles on this subject for several months to come. We think it is that important.

Thus far we have stressed the importance of the merchant having sufficient telephone service in his store and how he could best make use of it. We think the term "sufficient" should now be defined. Do you have enough telephone lines to permit your customers to reach you without delay? You should. No merchant would expect customers to wait at the door until he unlocked it. Do you have enough telephone lines to permit proper solicitation of your customers daily? You should. Daily contacts are most important if you expect your store to get your customers' business.

It may be that you can't answer these questions. It may be that you do not know whether or not you have sufficient telephone service. You probably think you have. Otherwise you would have added additional lines. But frequently merchants lock their doors to business by trying to handle the heavy load of telephone calls during the busy hour over one or two lines. If you can not reach a decision upon this question, your local telephone company will be only too glad to aid you. You can find out just how many busy calls, for example, you have during the day or during a busy period.

We wonder if you realize that your telephone customers are your most valuable customers. You probably do. They buy more at a time than the over-the-counter shopper, and because of this, the cost of serving them is less. The customer ordering by telephone hesitates to have only one or two items delivered. She is more likely to consider her needs for a longer period and place an order for a greater number of items. Various studies of selling costs in the retail food field show that the percentage of selling cost to amount of sale is much lower in the case of "telephone-delivery" sales than in the case of either "cash-and-carry" sales, "credit-carry" sales, or "counter-delivery" sales.

The following table comparing cost of various types of sales, taken from a retail food merchandising survey, illustrates the point:

	Selling Cost to Sale	% Selling to Sale
Cash Carry	$ .043	5.30%
Credit Carry	.041	3.72%
Counter Delivery	.042	2.57%
Telephone Delivery	.016	.84%

TALKING AND SMILING

In these hurried business days when our nerves along about mid-day have a tendency to rebel we frequently "take it out" on the telephone. We often make use of the telephone for talking purposes in a manner suggestive of the well-known top sergeant. We answer sharply. We bite off our words. We seem anxious to conclude the conversation. We are, to say the least, unpleasant. The customer must feel after these conversations that her order put her in the position of asking a favor. She will remember to ask fewer and fewer favors in the future.

It is not necessary to tell you that this is poor business. If the telephone cannot be used properly it should not be used at all. Of course, we don't realize that we are doing this sort of telephone talking. We notice it in others but we ourselves never feel guilty of this sort of thing. But are we sure? Reflect once as to how pleasant and leisurely your telephone conversations have been. Make sure your clerks' conversations have been pleasant. Resolve in the future to be more pleasant if at all possible. Resolve to make your telephone conversations more leisurely. Give your customers time to think over the telephone. Those thoughts probably are items of merchandise you will sell. Above all, convince them that you realize that you are being favored with their business regardless of its size.

Now, some of us do not have real pleasant telephone voices. But those voices can be made to sound pleasant if we follow a rule that has no exception. The voice of a person smiling is never unpleasant. It just is not possible to be harsh if it is possible to smile. And it ought to be easy to smile. Telephone conversations mean business and business means money to you. Don't smile after you get it, but while you are getting it.

INCREASING YOUR VOLUME

It is unfortunately characteristic of many business establishments today that they know less about their best customers than any other class of trade. The best customers frequently buy for cash or if they use credit they use it properly. As a result these customers need and get little consideration. Their trade is expected and usually too little effort is made to retain and increase it.

Food merchants are too innocent of this practice. We wonder, for example, how many merchants know the full names, addresses and telephone numbers of their regular customers. It seems to us that this vital information ought to be listed on a card index file. We can see where a file of this kind will pay real dviidends.

When you obtain the telephone number of a customer you have in a sense been given the key to his home. The number ought to be valued accordingly. If you are using suggestions given in one of these early articles you can during dull periods in the store literally visit with the housewife at her home and discuss her grocery needs. If this is properly done only good will and increased business can result.

A card index file can also be used when the customer calls over the telephone to order merchandise. Here is where the sales suggestion idea can be used just a little differently than described in a previous article. The file should list standard items of merchandise that each particular customer uses. When Mrs. Jones telephones for pork chops or coffee, she may be queried politely as to whether she has enough Double XX soap (her regular kind) or Excellent Peas (her favorite brand) in the house?

It should be borne in mind that the more you know about your customers the more business you may expect from them. It isn't always necessary that customers visit your stores and get to know you personally. The telephone is an instrument that can make friends and better customers out of only fair customers.

This business of increasing the volume of your business is a wide open field. We suggest that you give proper consideration to the telephone if the field appeals to you.

B. S. Read, Southern Bell President, Dies

Benjamin Stalker Read, of Atlanta, Ga., president of the Southern Bell Telephone & Telegraph Co. since 1924, died on July 23 at his home in Atlanta after a brief illness.

Mr. Read became second vice-president of the Southerwestern Bell Telephone System in May, 1914, and soon after, operating vice-president. When the government took over control of the telephone lines and systems of the United States in 1918, Mr. Read was among those appointed on January 8, 1919, to operate the Bell System lines under the direction of the operating board of the United States Telegraph & Telephone Administration. He was placed in charge of rate plans and miscellaneous commercial matters.

Following this work, he was elected president of the Mountain States Telephone & Telegraph Co., in the spring of 1919, with headquarters at Denver, Colo. In 1924 he was named president of the Southern Bell Telephone & Telegraph Co., which position he occupied until his death.

In the old days when men were operators the best was considered to be the one that could swear the loudest.

Plan For INSURANCE Credit on Farm TELEPHONES

● Telephone men and insurance agents work out preliminary plan to reduce rates for farmers having telephones. To meet again in September.

UNITED action of the Independent telephone industry, those writing farm insurance and farmers in seeking a reduction of fire insurance rates on buildings and farms having telephone service has resulted in negotiations leading toward a definite and workable plan.

A plan, which already has been given approval by the rate committee of the Farm Underwriters Association through the sanction of a 10 per cent reduction in farm fire insurance rates where the plan is made effective, has been approved by the officers and many of the directors of the United States Independent Telephone Association.

For several years Independent telephone men, through their National and state associations, have been working for a reduction of fire insurance rates for farmers having telephones. Telephone men have brought out that where the spreading of alarms by telephone companies to neighboring farmers and to fire departments have greatly reduced fire losses and damage. This justifies insurance companies quoting lower rates, telephone men pointed out.

Insurance companies have held that farm insurance was already being written at a loss and that the mere possession of a telephone on a farm was not by itself sufficient reason to reduce rates, because, in order to reduce farm fire losses, a fire department properly equipped to make runs and fight fires, was also a necessity.

Among Independent telephone men who have done considerable work on the proposition are C. C. Deering, secretary, United States Independent Telephone Association; Louis Pitcher, Dixon, Ill., and J. G. Crane, Kansas City, Mo.

It was through Mr. Crane's efforts, that Cliff C. Jones of R. B. Jones & Sons, insurance agents, Kansas City, Mo., became interested in the telephone side of the proposition.

At a meeting in Chicago on April 10 of telephone men and the managing committee of the Farm Underwriters Association, I. D. Goss, a prominent insurance man and chairman of the fire prevention committee of the Farm Underwriters Association proposed a plan which telephone and insurance men recommended be followed in working out a definite plan.

E. C. Blomeyer, vice-president, Theodore Gary & Co., was appointed by the telephone interests to continue negotiations with Mr. Goss until a point was reached, when the matter should be taken up officially by all concerned. A decision was reached early in July by Messrs. Blomeyer and Goss to take up the matter officially and on July 8, Mr. Blomeyer made a report to F. B. MacKinnon, president, United States Independent Telephone Association, which was submitted to directors of the National Association and to secretaries of state associations. Both groups were in favor of and enthusiastic about the proposed plan.

The plan is based on the proposition that the mere possession of a telephone on a farm is not sufficient to justify action by insurance companies, because the important thing is to have a practical and efficient method of fighting fire after alarms are given. This means that a community must have a rural fire department available to make a run to a farm when an alarm is given.

Most small communities do not have fire departments equipped to make such runs; even where they have, they cannot afford to cover all the farms, not only because of the expense involved but also because that would leave the communities unprotected while the apparatus was on farm runs.

The plan is, briefly, this: Telephone companies will sponsor or encourage small communities in which they operate, to equip themselves with apparatus for fighting farm fires. Insurance companies will pay the fire departments $50 every time they make runs to farms where special insurance is carried for this purpose.

This insurance (i.e., additional fire insurance for this particular purpose) will cost the farmer a very nominal sum—possibly $1 for five years or about 20 cents a year—and the farmer can obtain it and keep it only if he has a telephone.

Also, to issue this special insurance, insurance companies must be satisfied that water is available in some manner on the farm to the extent necessary to fight fire or supplement chemical supplies carried by the fire-fighting apparatus. This, it is stated, can usually be taken care of by the average farm; and, where the situation does not now meet the requirements, there are a number of inexpensive ways to meet it.

If all three requirements are met in a manner satisfactory to insurance companies, it is anticipated that a credit or reduction of 10 per cent, to begin with, will be allowed the farmer on his present insurance rate. This credit may be increased as time goes on if the plan brings about a lower loss ratio on farms in a given community. This credit has already been approved by the Farm Underwriters Association.

The plan, which has been designated as the "Three-Point Program," is based, it will be seen, on three specific points: (1) a local fire department—organized and equipped to meet the minimum requirements for such departments—available to go to farm fires, (2) plus the necessary water supply for each farm so protected, (3) plus a telephone on the farm.

Independent telephone people who have been active in the matter, feel not only that this proposition can be worked out satisfactorily in hundreds of small communities where telephone service is rendered by Independent companies, but also that it is highly constructive from the telephone as well as other standpoints. The plan puts an additional value in the rural telephone by making that telephone the basis of an important service which cannot be supplied by any other means.

They also feel that the proposition is highly constructive from the standpoint of saving property and even life and that, even if the business interest of the telephone company were not affected, Inde-

pendent telephone companies should be willing and glad to co-operate with the movement because of its valuable civic aspects.

A study has been made of the type of fire-fighting equipment necessary for this purpose. Manufacturers of such equipment have been very helpful in outlining a type of motor-driven apparatus which is comparatively inexpensive and also very reliable and well-suited to the purpose.

Negotiations carried on in Chicago have been only with representatives of stock fire companies doing business in the Middle Western states; so the plan, as now approved by insurance interests, applies only to some 18 states in the Middle West, including Ohio on the east, Colorado on the west and Oklahoma on the south.

It is anticipated, however, that stock form fire insurance companies in other parts of the country will adopt the plan if telephone companies in those territories will also co-operate; and it is also believed by both insurance and telephone men familiar with the situation, that the mutual fire insurance companies will co-operate.

Indications are, therefore, that, if Independent telephone companies will get behind this proposition, it can be worked out on a very large scale, constructively, and to the benefit of all concerned, including farmers, telephone companies and insurance companies.

Mr. MacKinnon has appointed a special committee of telephone men to work this proposition out with the insurance people as rapidly as possible. This committee, of which Mr. Blomeyer is chairman, Mr. Crane vice-chairman and Mr. MacKinnon, as president of the association, an ex officio member, has as its other members the following telephone men:

John H. Agee, Lincoln, Neb.; Frank E. Bohn, Fort Wayne, Ind.; J. C. Crowley, St. Paul, Minn.; C. C. Deering, Des Moines, Iowa; W. C. Henry, Bellevue, Ohio; Gustav Hirsch, Columbus, Ohio; A. J. Parsons, Springfield, Ill.; Louis Pitcher, Dixon, Ill., and Samuel Tucker, Pleasanton, Kansas.

Cliff C. Jones of R. B. Jones & Sons, Kansas City, has agreed to act as insurance adviser to the committee. John E. Prior, of Chicago, is secretary of the committee.

It is planned that early next month a general meeting will be held in Chicago with all the interested organizations represented, including farm underwriters, fire equipment manufacturers, Underwriters' Laboratories, Western Actuarial Bureau, National Board of Fire Underwriters and National Fire Protection Association, and the special committee of the United States Independent Telephone Association, which is designated "Special Committee on Fire Insurance Credits to Rural Telephone Subscribers."

It is planned at this general meeting to put the proposition under way in earnest, and probably to appoint subcommittees of various interests concerned to formulate different divisions of the matter, all with the idea of expediting the project and getting it under way as soon as possible.

RAMBLINGS

J. A. Smith

Frank Shoup of Dallas Retires

Another mile post in the course of time reminds us that friends come, make their mark, and retire or pass on. Frank Shoup, assistant to the general manager of the Dallas Telephone company, Dallas, Texas, was retired during July, after serving his company more than twenty-five years.

* * *

The anticipation of seeing Frank Shoup was one of the incentives for visiting the "bunch" in Dallas. For two decades we made pilgrimages from our old home in Fort Worth to "have it out" with Shoup about advertising in our publication, and we learned to love him as a friend and as a good square shooting man.

* * *

High spots in the life of Shoup show an active life from the beginning of his career. He admits himself that his first day of life was a day of celebration, but disclaims any participation in the festivities. In a sketch for Rambler Mr. Shoup stated that the "high point of my career was reached at my birth, as being the first white child born in Sewanee, the bells were rung and the students of the Universities of the South were given a holiday." Highlights of the career include managing a university football team, winning debating honors, newspaper reporting in New Orleans, instructor at a woman's college, headmaster of a school for boys, engineering, publicity and advertising work with the telephone company. Mr. Shoup is now assistant general manager of the company.

* * *

Our congratulations to Garland Foscue, another Texas boy who came up to the "big league" of business and made good. In this issue will be found announcement of the appointment of Foscue to a very important position with his company.

Dakota Central Making Rural Improvements

J. J. Patterson, local manager of the Dakota Central Telephone Co. announces that the company is making extensive line repairs on all rural lines out of Milback, S. D. A considerable amount of money is being spent by the company on the project, a large portion of which will go to pay for labor in the work.

Officials of the company, together with Mr. Patterson, have just completed a survey of the farm lines, and the territory covered has been divided into sections for carrying out the improvements.

Plans New Exchange

Plans for additions to the Orange County Telephone Co., Middletown, N. Y., have been placed before the board of directors for approval, Frank D. Fancher, general manager, announced. The cost is tentatively estimated at $50,000.

The present commercial quarters of the building were built in 1913 and occupied in April, 1914, when the company had forty-five employes and 2,189 telephones. Now it employs seventy-eight persons and operates 5,708 telephones.

Elected General Manager

August Burkart, who has been connected with the Sussex Telephone Co. of Newton, N. J., the last 24 years, was elected vice-president and general manager of the company at a recent meeting of the board of directors.

To be able to devote his undivided attention to the company he will move his offices to Newton, N. J. In the last two years Burkart has been plant superintendent for a group of operating companies comprising the Sussex Telephone Co., Tri-State Associated Telephone Corp., Matamoras Telephone Co. and the Van Pike Telephone Co.

New Switchboard

A new switchboard and other office equipment has been installed in the new office of the Lincoln Telephone and Telegraph Co. at Utica, Neb., H. F. McCulla, general commercial superintendent for the company has announced.

Plans New Building

Plans for construction of a new $10,000 office structure at Palm Springs, Calif., are being completed in Redlands by the Southwestern Home Telephone Co.

The New LEICH SELF CONTAINED Handset Telephone
The "2 in 1" Telephone

No. 90 C.B. Self Contained Handset Telephone with Straight Line or Harmonic Ringer.

The new No. 90 "2 in 1" handset telephone is entirely self contained. To the popular No. 62 C.B. handset telephone, which has the induction coil, condenser and terminal block in the base, is added a sub-base and bottom plate with ringer attached.

If a self contained telephone is desired, all you have to do is add the sub-base and bottom plate with ringer attached — "two instruments in one." Only two screws to loosen — no rewiring.

Two gong ringer—booster anti side tone circuit.

No. 62 Telephone may be used as an answering telephone.

No. 62 Telephone may be used with any conventional bell box.

No. 62 Telephone with sub-base and ringer is a self contained telephone and is known as Leich No. 90.

— "Order one today" —

LEICH ELECTRIC CO.

GENOA, ILLINOIS

Discriminating Travellers Prefer

HOTEL PRESIDENT

There's a warmth of greeting — a restful comfort and luxury at Hotel President that makes your visit so much more pleasant. A splendid location; food that spurs the jaded appetite — all at low cost. Garage directly opposite entrance.

PERCY TYRRELL *Managing Director*

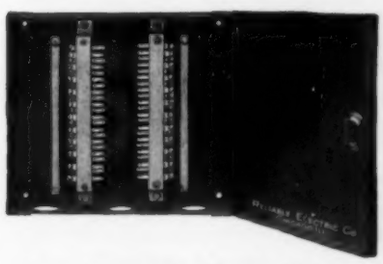
450 ROOMS with Bath from $2

"JUST OUT OF THE NOISE ZONE"

KANSAS CITY

BALTIMORE AT 14th ST.

STEEL BUILDING BOXES



Type "E" Manufactured in All Sizes

NEATLY DESIGNED.

NUMEROUS KNOCKOUTS AT TOP AND BOTTOM.

SCREW BINDING POSTS FOR DISTRIBUTING WIRES.

SOLDERING TERMINALS FOR CABLE WIRES.

Reliable Electric Company

3145 CARROLL AVE. CHICAGO, ILL.

FCC Authorizes A.T.&T. Coaxial Cable

● Holds it as necessary advancement of communications. All interests have access to use of cable. Commission also warns employees not to accept favors in telephone inquiry.

FINDING that installation of a coaxial cable between New York and Philadelphia by the American Telephone and Telegraph Co., over which television images and multiple telephone and telegraph messages can be sent, is necessary for the advancement of communications, the Federal Communications Commission July 24 authorized starting of experimental service.

The cable will transmit at the same time 240 telephone messages in each direction, or 2,400 simultaneous telegraph messages. Television images can be transmitted when the cables are not otherwise in use, but not at the same time voice or electric impulses are being transmitted.

"The experiments should be encouraged for the public welfare and in the public interest," the commission said, adding that the coaxial cable "would have a tendency to reduce rates rendered by use of such a cable." All parties having an interest in the transmission of television images should have access to use of the cable during the experimentation, the commission held.

When the application for permission to install the cable was filed Western Union and Postal Telegraph filed objections, which were withdrawn July 15. See page 18 for description of coaxial cable.

WARNS FCC EMPLOYES ON ACCEPTING FAVORS

In an order issued on July 27 to all employes of the Federal Communications Commission connected with the investigation of the American Telephone & Telegraph Co., Chairman Walker of the telephone division of the commission, warned them to decline to accept any favors or gifts from company officials or employes.

He listed luncheons, theater, golf or club engagements, introductions to clubs or places of amusement by A. T. & T. officials and employes, and all financial relations such as the cashing of checks or acceptance of loans, among the banned "favors."

The investigation of the A. T. & T. and its subsidiary organizations, for which Congress appropriated $750,000, is now well under way. Field investigators are scattered about the entire country, and others are investigating records in the patent office in Washington, D. C. Appointment of a general counsel who will have charge of the work under Mr. Walker's direction is expected soon.

The letter sent to the commission employes read as follows:

"It is of the utmost importance that persons engaged in the telephone investigation, including that of the manufacturing and other subsidiary companies, so conduct themselves at all times as to avoid suspicion of impropriety, lack of diligence, or improper attitude toward the work in which they are engaged. To this end, all persons engaged in the telephone investigation under the Federal Communications Commission must be cautioned against conduct which may be prejudicial to the investigation.

"The acceptance of favors or gifts from company officials or employes must be strictly prohibited. Luncheon, theater, golf, or club engagements, or introductions to clubs or places of amusement, extended as favors from company sources, should be courteously declined. Financial relations with the company, its officials or employes, including loans of money, cashing of checks, etc., must likewise be strictly prohibited.

"The commission has confidence in the persons employed, and is anxious to assist them in performing the service expected by the country from this investigation. Members of the staff should realize that they are public servants in the highest sense of the word. As honest, sincere, conscientious and industrious servants, they will wish to give the best of their time and talents to the work of this public investigation.

"They will, therfeore, so conduct themselves at all times as to reflect the proper attitude toward this public investigation, and honor upon their employment.

"Compliance with the suggestions herein should, of course, be expected, and any failure thereof should promptly be reported."

FCC DENIES APPLICATION ON DIRECTORATES

On July 24 the FCC denied the joint application of Messrs. Newcomb Carlton and E. Y. Gallaher for a rehearing in the matter of the order of the commission recently made, denying them authority to hold offices and directorships in the Western Union Telegraph Co. and the Mexican Telegraph Co. Commissioner Stewart voted to deny application for rehearing but stated that the original application should have been granted for reasons set out in his opinion.

ISSUES TARIFF ORDER NO. 12-A

At a special session of the Federal Communications Commission held at its office in Washington, D. C., on July 31, 1935: issued order No. 12-A. The order follows:

The Commission having under consideration Tariff Circular No. 1 issue of July 3, 1935 containing rules and regulations governing the construction, filing and posting of schedules of charges by carriers subject to the Communications Act of 1934:

And the Commission having considered criticisms and suggestions respecting said rules and regulations offered by carriers:

IT IS ORDERED, That Commission Order No. 12 be, and the same is hereby, superseded by Commission Order No. 12-A and that Tariff Circular No. 1, issue of July 3, 1935, be, and the same is hereby, superseded by Tariff Circular No. 1, issue of July 31, 1935, appended hereto and made a part hereof; and that all carriers subject to the Communications Act of 1934 shall observe the Rules Governing the Construction, Filing and Posting of Tariffs Relating to Interstate and Foreign Wire or Radio Communications, by Carriers Subject to the Communications Act of 1934, Excepting Connecting Carriers as

(*Please turn to page* 30)

An Old Favorite . . .

NATIONAL CABLE RINGS

In a New Convenient Package The "HANDY FIVE" CLUSTER

Always "National Rings" have delivered exceptional service in the hanging of cable. With their use the work is quickly and efficiently done. Because of the tightness of their grip on the strand you can pull the cable either way and there is no need to reride to replace or respace rings.

The "Handy Five" Cluster gives an added convenience in ring handling—it prevents all hooking together of rings and because of the simplicity of fastening does away with all ground litter. Write for samples and prices.

THE NATIONAL TELEPHONE SUPPLY CO.

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Canadian Manufacturer—N. Slater Co., Ltd., Hamilton, Ont.
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ECONOMY ◆ RELIABILITY

Order One NOW for a 30-day Free Trial

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PRICE $44.00 EACH
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Reliable ringing service is essential in providing satisfactory telephone service.

Use TELERING and provide the MOST reliable service at the LEAST cost.

Current Consumption negligible

Positively No Radio Interference

Directly converts Commercial Alternating Current to Telephone Ringing Current.

You can always depend upon our full co-operation and prompt service.

Sold by Leading Telephone Distributors

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Phillips Telephone Cords for Economy

Both by repeated tests as well as under actual conditions of service, Phillips telephone cords show an extraordinarily low cost per year of service life. This is because of the exclusive method of construction used and the careful selection of materials with which they are built.

Everybody knows how ragged and frayed ordinary cords soon get. Phillips cords do not begin to show signs of wear until long after others have been discarded. They are covered with a newly-developed, tightly-woven material to form a compact, smooth, silk-like braid, which retains its attractive appearance even after years of hard service.

Phillips cords will not form a permanent kink. Thus another frequent source of wear is eliminated. And their insulation resistance is not only high to begin with, but remains high even under the most severe conditions.

For a new experience in cord economy, specify Phillips cords on your next requirements.

●

PHILLIPS PRODUCTS INCLUDE:—Bare and Insulated Copper Wires—Rubber Insulated Wires—Enameled Wire—Magnet Wire—Power Cables—Switchboard Cables—Paper Insulated Cables—Flexible Cords—Electrolytic Copper Rods, Shapes, etc.

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FACTORIES—MONTREAL AND BROCKVILLE
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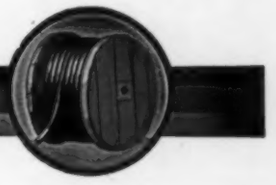

FCC Authorizes A.T.&T. Coaxial Cable

(*Continued from page 26*)

Defined in Section 3(u) of the Act and Excepting Carriers Operating in Alaska, which said rules are contained in said Tariff Circular No. 1, issue of July 31, 1935.

IT IS FURTHER ORDERED, That said Tariff Circular No. 1, issue of July 31, 1935 shall become effective on the first day of September, 1935, except as otherwise provided in said circular.

IT IS FURTHER ORDERED, That the administration of the rules in said Tariff Circular No. 1, issue of July 31, 1935 for telephone and telegraph companies be and the same is hereby delegated to, and vested in, the Chairman of the Telephone Division and the Chairman of the Telegraph Division, respectively.

IT IS FURTHER ORDERED, That Commission Order No. 11 shall be superseded by the rules contained in said circular on the first day of September, 1935.

Refunds 1st Mortgage 5½% Bonds With 4½% Issue

The Northern Ohio Telephone Co., Bellevue, Ohio, on August 1, completed the refunding of its first mortgage 30-year 5½ per cent bonds with a new issue of 4½ per cent bonds.

On February 1, 1927, the Northern Ohio Telephone Co. issued $1,200,000 30-year sinking fund 5½ per cent bonds. Additional bonds in the amount of $485,000 were issued April 1, 1928, making a total of $1,685,000. Bonds were retired through the 1 per cent sinking fund requirement or the sale of property until there was outstanding on August 1, 1935, $1,513,500 of these 5½ per cent bonds.

Wm. C. Henry, secretary and general manager of Northern Ohio company investigated the possibility of refunding the 5½ per cent bonds with a bond carrying a lower interest rate. In order to eliminate selling new bonds to an underwriter at four to six points, margin for underwriting expense, it was decided to attempt to sell these bonds in large blocks direct to certain institutions.

R. F. DeVoe, of DeVoe, Dyke & Sperry, original underwriter of Northern Ohio bonds issued in 1927, who has also handled a part of the financing for a number of Independent companies including the Rochester (N. Y.) Telephone Corp. and the Mutual Telephone Co. of Erie, Pa., was secured to act as agent for the company in placing these new bonds.

On August 1, 1935, the Northern Ohio Telephone Co. called for payment its outstanding 5½ per cent bonds at their call price of 105 and issued $1,600,000 principal amount of new first mortgage sinking fund 30-year bonds carrying an interest rate of 4½ per cent. These bonds were sold at 103 to 11 financial institutions under a direct purchase and sale contract between the company and these institutions. This company realized a premium of $48,000 in the sale of the bonds.

The heavy expense of underwriting was avoided and in its place the company paid a commission to DeVoe, Dyke & Sperry as agent. The refunding of its 5½ per cent bonds with a new issue of 4½ per cent bonds represents a saving to the company over a period of 30 years in excess of $330,000 over and above all expenses incident to the transaction.

The company was able to secure a liberal sinking fund provision in its new bonds. Ordinarily bonds carry provision for purchase and retirement for 1 to 2 per cent of the total amount of bonds each year. The sinking fund provision of the Northern Ohio new bonds calls for 1 per cent of the total issue of bonds; or second, the deposit with the trustee of the annual sinking fund requirement which deposit may be used to acquire additional property at a ratio of 75 per cent of its cost or fair value; or, third, net additions to property may be used to satisfy the requirements of the annual sinking fund and such net additions will be accepted at 75 per cent of their cost value.

At the request of the financial institutions, the new bonds of the Northern Ohio company were registered with the Securities and Exchange Commission at Washington, D. C.

Convention Schedule

United State Independent Telephone Association, Stevens Hotel, Chicago, October 8, 9, 10 and 11.

The Illinois Telephone Association, Hotel Pere Marquette, Peoria, November 14 and 15.

Illinois Utility Tax May Be Collected

The 3 per cent public utility tax may be collected from telephone subscribers only after schedules or appropriate riders providing for a modification of the rate schedules are filed with and accepted by the Illinois Commerce Commission, according to a bulletin issued by A. J. Parsons, secretary, Illinois Telephone Association.

Mr. Parsons was advised that if it is the desire of any company to add the 3 per cent tax to the bills of its customers, the company may file with the commissions, in the usual way, revised rate schedules (or appropriate riders) providing for modification of its rate schedules. In the event schedules are so filed, they will be considered by the commission and either suspended or permitted to become effective in the manner provided by law.

It is suggested by the commission that any schedule filed having for its purpose the addition of the public utility tax to the customers bills should contain a paragraph reading substantially as follows:

"The gross and net amounts computed under this schedule or these schedules, as the case may be, will be increased by an amount equal to 3 per cent of the revenues subject to tax under the provisions of the Public Utility Tax Act, passed by the General Assembly, effective July 1, 1935."

The procedure outlined contemplates no change in the basic rate schedules themselves, but is intended merely to provide for increasing the total charges computed under the schedules by 3 per cent.

Crosstalk Patent

Myron A. Weaver, Rye, and Oliver H. Coolidge, Bedford Hills, N. Y., have been granted a joint patent by the United States Patent Office to cover their invention of an apparatus and method for remedying crosstalk in telephone reception. The invention is different in 15 respects from any before patented.

American Telephone and Telegraph Co. is the assignee and has exclusive use of the 15 new features.

G. W. Schweer Dies

George W. Schweer, well known Independent telephone pioneer of Clinton, Mo., and former national Republican committeeman from Missouri, died at his home in Clinton, August 12, of heart disease. He is survived by the widow, four sons and four daughters.

Ask Your Jobber About

The New Deluxe Dillon Temperometer

The instrument which eliminates all guesswork in heating wiping solder, waxes, paraffin, and compounds. Every cableman needs one.

DILLON MFG. CO.

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A Distinctive Hotel

It is easily accessible to shopping and theatrical centers, churches, libraries, parks and transportation lines.

Ladies traveling without escort will appreciate the atmosphere of security and rest it offers.

Every room with tub and shower.

ROOM WITH BATH $1.50

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...and 60,000 other items

WHERE dependability counts—only the highest quality electrical products will do. One such quality product is Western Electric Lead Covered Cable—a cable whose dependability is insured by the most exacting of manufacturing standards.

But that's not all. Out of its roster of 60,000 electrical items, Graybar is prepared to meet *any* need of a telephone industry. And behind *every* Graybar item stands the Graybar reputation for quality that goes back 66 years.

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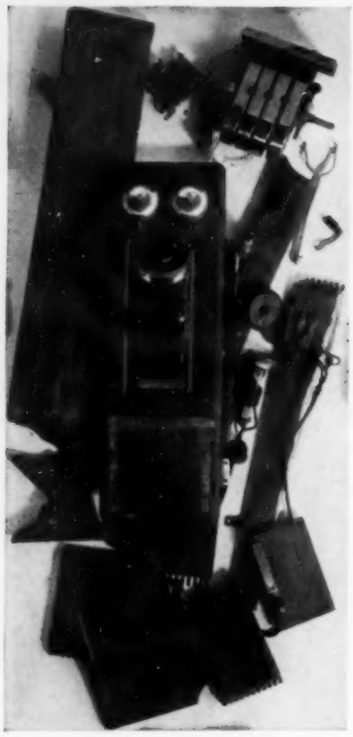

Destroyed this Telephone

By Entering Along the Drop Wire

A MODERN - EFFICIENT

COOK

O - TYPE SUB - STATION ARRESTER will prevent such loss and the possibility of fire to the subscribers premises.

Fully Enclosed.

Weatherproof.

Fireproof.

Mounted Indoors or Outdoors.

Equipped with True Gap Dischargers that will Not Permanently Ground the Line.

There is an O-Type for the Particular Type of Fuse You Use.

ASK YOUR JOBBER'S SALESMAN

COOK ELECTRIC CO.

CHICAGO

Modern Telephone Repeaters

(*Continued from page* 15)

unit losses is about 32 watts. The D. C. consumption when the repeater is operated on emergency dry cells is 0.5 amperes at 5 volts and 15 milliamperes at 180 volts.

The installation of the modern repeater is a comparatively simple task. The equipment comes assembled on standard mounting plates about 26 inches long and drilled for horizontal mounting on standard relay racks. The vertical space depends on the type and the amount of equipment to be supported.

One feature often overlooked in the engineering of telephone plants is that repeaters may save substantial sums in the first cost of circuits by permitting the use of cable of greater length and smaller gauge conductors where this type of construction is otherwise desirable. Repeaters are by no means a substitute for a good line, but it will compensate for some lack of conductivity and thus permit saving in both wire and supports and will reduce future maintenance by permitting the use of conductors of higher tensile strength and possibly less weight. Repeaters may make it possible to use iron wire, where, without them, copper would be necessary.

Repeaters can be used to advantage in numerous ways around almost every telephone exchange. On circuits radiating from toll centers, on which transmission is not quite so good as could be desired a repeater does the trick. In most of these cases the volume of business from each small point is not sufficient to justify the construction of a new line to the toll center and toll revenue is lost as a result. One cord circuit repeater in the toll center will improve the service to several such tributaries at a minimum cost.

Another situation where the cord circuit repeater proves-in is that of the exchange adjacent to a larger center but too far away for commercial transmission over standard cable. As an example, take an exchange of only 25 lines, located five miles from a larger town. Operating expense is excessive and the traffic load could readily be absorbed by the larger exchange. Transmission between the exchanges would be satisfactory over a 19 gauge cable though one subscriber in the small exchange would not be able to talk to his neighbor for such a conversation must traverse the cable twice. The modern repeater solves the problem as it supplies the required energy to overcome the double cable loss.

The new modern repeater in its simplified, though improved form, is sure to have a great future and will play an important part in the scheme of things throughout the Independent telephone field. The rugged construction, ease of installation and maintenance, unattended operation and low first cost has removed all of the objections held for the fussy, spluttering old repeaters of the past. The adaption of alternating current power supply is also a big improvement from the operating man's point of view. Everything possible has been done to place this modern repeater within the easy reach of all. Telephone men can do well to investigate the possibilities of the modern telephone repeater for the probabilities are that it can save them money and by the same token improve telephone service in general.

Telephone, railroad, pipe line and power companies desiring information on modern repeaters may secure source of supply by writing to TELEPHONE ENGINEER.

A. T. & T. Shows Gain In First Five Months

Consolidated report of the Bell system—American Telephone & Telegraph Co. and its 24 associated telephone companies—for five months ended May 31, 1935, shows net income applicable to the stock of American Telephone & Telegraph Company at $50,770,112, after depreciation, interest, Federal taxes and minority interests, equal to $2.72 a share on the company's 18,662,275 shares of capital stock.

This compares with $50,045,062, or $2.68 a share in five months ended May 31, 1934.

The above figures include company's proportionate interest in deficit of Western Electric Co. and in earnings or deficits of other controlled companies not consolidated.

The report of American Telephone and Telegraph Co. only for the six months ended June 30, 1935, subject to minor changes when final figures for June are available shows net income of $59,034,406, after charges and Federal taxes, equal to $3.16 a share on 18,662,275 shares, against $61,916,697, or $3.31 a share, in the first six months of 1934.

For the quarter ended June 30, last, the indicated net income of American Telephone & Telegraph Co. only (based upon a comparison of the company's reports for quarter ended March 31 and the six months ended June 30) was $28,937,118, after charges and Federal taxes, equal to $1.55 a share, against $30,097,288, or $1.61 a share, in the preceding quarter and $28,924,357, or $1.55 a share, in June quarter of 1934.

Organize New Oklahoma Telephone Association

At a meeting on July 28, telephone members of the Oklahoma Utilities Association unanimously withdrew from that organization and formed the Oklahoma Telephone Association.

The following officers were elected: President, C. E. Devin, Apache; first vice-president, F. C. Trower, Mannford; second vice-president, J. B. Bohlen, Nicoma Park; secretary, H. W. Hubenthal, Oklahoma City and treasurer, M. A. Sanders, Oklahoma City.

C. E. Devin

H. W. Hubenthal

The officers also constitute the executive committee.

The following were elected directors: C. E. Devin, Apache; A. G. Davidson, Purcell; C. M. Tuggle, Roosevelt; J. M. Keffer, Waynoka; Endsley Jones, Kingfisher; F. C. Trower, Mannford; R. J. Benzel, Oklahoma City; J. W. Walton, Broken Arrow; M. J. Stooker, Oklahoma City; J. M. Nelson, Skiatook.

Those attending the meeting were C. E. Devin, J. B. Bohlen, J. M. Nelson, A. G. Davidson, W. C. Robertson, J. J. Morgan, M. J. Stooker, Maurice Wright, M. A. Sanders, R. J. Benzel, J. W. Walton, Endsley Jones, F. C. Trower, H. W. Hubenthal, E. C. Frederick and H. H. Harris. Represented by proxy were Sam Hand, C. M. Tuggle, R. B. Fairley, Oliver Odell and Claude Smithpeter.

Appeal Depreciation Rate Decision

The Nebraska supreme court's recent decision, upholding the state railway commission's power to fix depreciation rates for the Northwestern Bell Telephone Co. of Omaha has been appealed to the United States supreme court. The appeal was filed at Lincoln by T. J. Peycke, general attorney for the company.

Filing of appeal followed the granting of permission for the action by the state court.

The case is reported to be the first of its kind in the country and is regarded as an important test suit, according to the Associated Press.

The company protested that only the Federal Communications Commission had authority over the depreciation controversy, but the state commission cut a requested 4.48 per cent rate to 3.5 per cent.

Hearing Postponed

With direct testimony completed in the four year old investigation of the Wisconsin Telephone Co. the public service commission counsel moved to conclude rebuttal testimony and argument before the case goes to the commission for a decision. Hearings will be adjourned to September to permit the commission staff to prepare cross examination of company witnesses, including officials of utilities affiliated with the Wisconsin Company.

STRONG, EVEN TALKING CURRENT

- Replace every two old round No. 6's you remove with one TWIN-SIX 3-Volt Telephone Battery. The TWIN-SIX has 12½% more zinc surface than two No. 6's and will give your subscribers a strong, EVEN talking current.
- You improve your service and save time and money when you replace with the TWIN-SIX. You make two connections instead of four, handle 40% less weight and 30% less bulk—one compact square battery instead of two bulky round ones!
- Order 30 or more TWIN-SIX Batteries and they will be shipped F.O.B. your Exchange. Price is only 39¢ each (47¢ west of the Rockies). Order from Inland Equipment Co.

BURGESS TWIN-SIX TELEPHONE BATTERY

INLAND EQUIPMENT CO., (Distributors)
MAX F. HOSEA, President, INDIANAPOLIS, IND.

P. W. Conrad Named By Automatic

One of the most interesting developments of business in recent years—a development that has been rather less conspicuous than it has been far-reaching in its effect—is the extension of the use of automatic telephone switching devices and principles to non-telephone uses.

Automatic Electric Co., as the originators and foremost exponents of automatic telephone switching, has made exhaustive exploration of the field of utility of its switching devices with respect to adaptation to other than purely telephonic uses, as exemplified in electrical remote control operations, race track totalizater, radio broadcast switching, applications to machine operations to effect production economies, etc.

This extension of activity, coming at a time when developments in telephony itself were unfolding at a faster rate than ever before, has called for services of an enlarged executive staff combining thorough knowledge of the telephone field with broad experience in the general field of business.

In conformity with this need, P. W. Conrad has been appointed vice president of the company in charge of all sales promotion and commercial activities.

P. W. Conrad

Mr. Conrad's career in business has been characterized by both variety and unusual interest. Previous to entering the employ of Automatic Electric Co., he had travelled extensively in the interest of other companies, and had shown remarkable ability in sales and sales promotional work.

Mr. Conrad is a graduate of Amherst College and has also completed two years of special graduate study in public utilities and allied fields at Harvard Graduate School of Business Administration. He entered the service of Automatic Electric Co., early in 1934 as assistant vice president with offices in New York. In this capacity he assumed direction of special sales negotiations, giving particular attention to the promotion of equipment for railroad and industrial use.

Burgess Announces New Tri-Six Battery

The Burgess Battery Co. of Freeport, Ill., announces another new telephone battery, the Tri-Six, a 4½-Volt battery engineered especially for telephone service. The Tri-Six is a further development of the Burgess Twin-Six. The Tri-Six is designed to replace three No. 6's.

The new Tri-Six is 5 $^{5}/_{16}$" high x 3$^{15}/_{16}$" wide x 3$^{13}/_{16}$" deep. Has waterproof, leakproof, heat-welded jacket which resists moisture, oils, and battery liquids. It is square in shape.

The Tri-Six contains 12 cells made of heavy drawn zinc cans and protected by "Chrome," a preservative which retains power when the battery is not in use, it is said. The 12 cells are connected in series parallel to give 4½ Volts.

Telephone Net Holds Steady In April

Net operating income of 59 telephone companies reporting to Federal Communications Commission totaled $16,213,906 in April, versus $16,851,393 in April 1934. Operating revenues for April totalled $82,128,087 versus $79,839,955 in April, 1934. Four months' net operating income amounted to $61,598,501 versus $64,329,171 in like period last year, and gross for four months was $322,644,181 versus $316,790,363. Telephones in service at end of April numbered 14,303,350 versus 13,999,481 at end of April, 1934, an increase of 2.2 percent.

Buy Exchanges

D. A. Rice, owner of the Doniphan (Mo.) Telephone Co. has purchased the telephone system in Wayne county with exchanges located in Greenville, Piedmont, Taskee and Williamsville, owned and operated in past years by the North Central Telephone Co.

Arthur Rice of Alton, Mo., father of D. A. Rice, at the same time bought the Ironton, Mo. telephone exchange and with two of his sons will operate the system.

Materials and Manufacture

Conductors are selected to meet rigid specifications based on telephone requirements and every shipment is tested to see that those specifications are met. Insulating materials are all of premium quality and constantly checked for adaptability to telephone needs, and must meet our specificaions, which result in long service for Whitney Blake Telephone Wires. Throughout the entire manufacturing process we use the latest and best methods and machinery, supplementing this with a series of tests and inspections in every department, plus a final series of tests before we apply the Whitney Blake lead seal of quality.

Telephone Wire

RUBBER COVERED
COPPERWELD - BRONZE - COPPER
DROP - INSIDE and BRIDLE

WB

MANUFACTURED BY

The Whitney Blake Co.

SOLE SELLING AGENTS IN U. S. A.

Graybar

ELECTRIC COMPANY

FOREIGN DISTRIBUTORS: *International Standard Electric Corporation*, 67 Broad St., N. Y. C.

G. B. Foscue Named Head of Sales Company

Announcement has been made of the election of Garland B. Foscue as chairman of the board of directors of American Automatic Electric Sales Co., of Chicago, which company acts as distributor for products of the Automatic Electric Co. Mr. Foscue brings to his new position a thorough knowledge of telephone matters and, by virtue of his long experience in the operating end of telephone work, qualifications which eminently fit him for his new duties.

G. B. Foscue

A native of the state of Texas, Mr. Foscue entered the telephone business in 1914 as messenger boy at the Ennis, Texas exchange of the Texas Telephone Co. Mr. Foscue's duties were rather all-embrasive for a beginner—but he mastered them so well that within a few months he was made exchange manager, a position which he held for the succeeding three years. A few months later, he was made manager of the exchange at Temple, owned and operated by the same company. Early in 1918 he was promoted to the general offices of the Texas Telephone Co., at Waco as assistant to the president. At that time the president of the Texas Telephone Company was J. B. Earle. Later when E. C. Blomeyer assumed the presidency of the company, Mr. Foscue was retained in his capacity as assistant to the president.

In 1925, Mr. Foscue became assistant to Mr. Blomeyer, who had shortly before become vice president of Theodore Gary and Co. In 1928, Mr. Foscue was made president of the Midland Trading Company of Kansas City. When in 1930 the company moved its offices from Kansas City to Chicago, Mr. Foscue moved with it, continuing as its president with headquarters in Chicago.

FWD Celebrates 25th Anniversary

The Four Wheel Drive Auto Co., Clintonville, Wis., celebrated its 25th anniversary with the announcement by Walter A. Olen, president and general manager, of plans for the enlargement of the selling and advertising activities.

"Total business from all sources," he said, "has increased 70 per cent over total business for the same period last year. We face the beginning of our second 25 years with plans for added impetous to our sales and advertising program. We have emerged from the recent down swing of the business cycle with an improved product and splendid business prospects."

FWD manufactures four wheel drive trucks exclusively.

A. G. Bean, Pioneer Manufacturer, Dies

A. G. Bean, chairman of the board of the White Motor Co., Cleveland, O., died at his home in Elyria, O., July 19 from a heart attack.

Mr. Bean will be remembered by the older telephone men as identified with the old Dean Electric Co. of Elyria for a number of years, in high executive positions. Upon the reorganization of the Dean company early in 1914 as the Garford Mfg. Co., Mr. Bean became its vice-president and general manager.

When the telephone business of the Garford company was taken over by the Stromberg-Carlson Telephone Mfg. Co., in 1916, Mr. Bean continued with the Garford company in the manufacture of motor trucks. He had continued in the motor truck industry since then.

Mr. Bean was named president of the White Motor Co. in 1930. He retired to the chairmanship of the board last summer when his health became impaired.

In 1932 Mr. Bean was named one of three receivers for the Studebaker corporation.

Makes Line Repairs

The Commonwealth Telephone Co. has been making line repairs in and around Prairie du Chien, Wis., locating intereference and making repairs on cables in an effort to clear up line trouble in that vicinity.

STURGIS

TRUE POSTURE

Operator Chairs

Easy
Quick
Adjustments

No. 426

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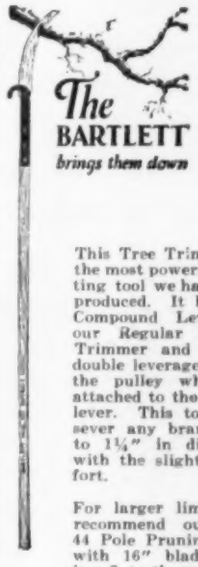

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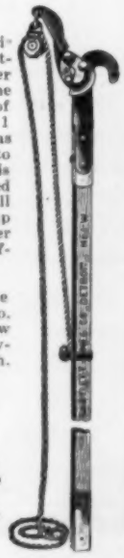
Bartlett

No. 1-W Pulley Type Tree Trimmer

No. 44 Pole Saw

This Tree Trimmer is the most powerful cutting tool we have ever produced. It has the Compound Lever of our Regular No. 1 Trimmer and it has double leverage due to the pulley which is attached to the curved lever. This tool will sever any branch up to 1¼" in dismeter with the slightest effort.

For larger limbs we recommend our No. 44 Pole Pruning Saw with 16" blade having 7 teeth per inch.



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Crapo Galvanizing neither cracks nor peels —not even when subjected to splicing, twisting or sharp bending. Its tight, ductile, ***pure zinc*** coating insures corrosion resisting joints, longer life, lower maintenance costs.

Crapo Galvanized Wire is made in EBB, BB and Steel grades. ***Crapo*** Galvanized Seven Wire Steel Strand furnished in Standard, Siemens-Martin, High Strength, Extra High Strength.

Indiana Steel & Wire Co.
Muncie, Indiana

"Yes, Sir, I Could Have Saved Money—

"if I had read the SUTTLE SALESMAN!"

This was a remark made last week by a telephone man when we called his attention to the remarkable value offered on pages 42 and 43 of the SUTTLE SALESMAN Number 38 just recently mailed out.

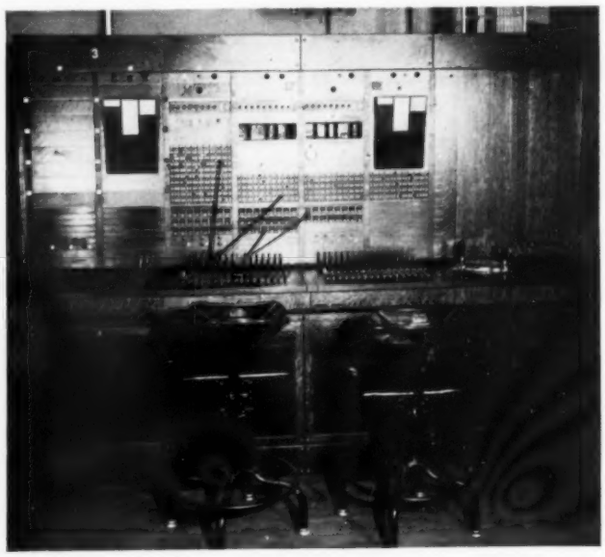
You have a copy of it at your own desk. It pays you to

Read the
SUTTLE SALESMAN

SUTTLE EQUIPMENT COMPANY
LAWRENCEVILLE, ILLINOIS

Corning, Iowa, Gets New Equipment

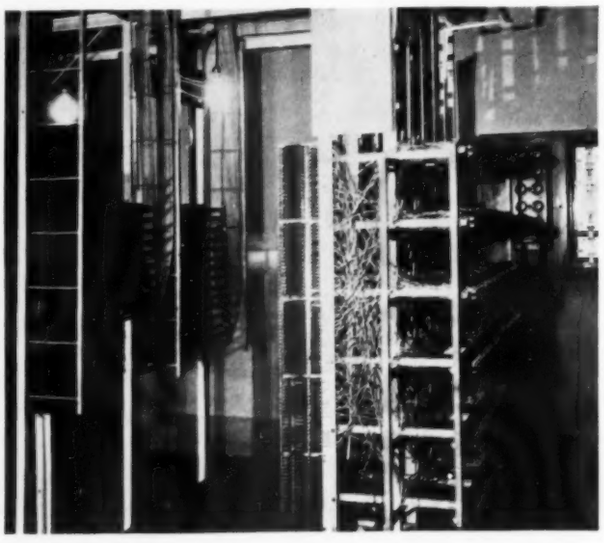
WITHIN the last few weeks, a complete new switchboard installation was cut into service in Corning, Adams County, Ia., without the least interruption of customer service. The new equipment was manufactured and installed by the Stromberg-Carlson Telephone Manufacturing Co. It replaced old model Stromberg-Carlson equipment which had been installed 30 years before and since that date had seen constant service. Installation was made under the direction of C. H. Smith of Oklahoma City. A number of officials of the Western Telephone Corp., and other out-of-town visitors were present at the switch-over. Included among them were General Manager J. B. Haley of Kansas City; Assistant General Manager F. M. Browne of Kansas City; H. T. McCaig, assistant manager of the Chicago Division of the Stromberg-Carlson Company; W. J. Pfaender, Stromberg-Carlson Iowa representative; C. F. Saunders, Stromberg-Carlson Company; W. Naylor, district superintendent of the Western Telephone Corp. of Denison; W. H. Fowler, president of the Fowler Telephone Co., of Pella, Ia.; G. E. Atkinson and Guy Frymire of the Creston Mutual Telephone Co., of Creston, Ia.



New Stromberg-Carlson 3-Position Switchboard Installed at Corning, Iowa

An "open house" for the public was held at the new Corning exchange with public inspection of the new facilities.

(*Concluded on page 37*)



View of Relay Rack in the New Corning Exchange

The Clearing House

For the convenience of readers of Telephone Engineer

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Exclusive telephone accounting since 1907.
Certified Public Accountants.
We install the well-known
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Replaces Carbon Mica
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Flux Combined
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REBUILT AND REPAIRED
Wall phones converted into desk sets.
Highest grade of material and workmanship. Fully guaranteed.
A post card brings full information and prices.
The
TELEPHONE REPAIR SHOP
Rogers Park Station, Chicago, Ill.
We Specialize in Rebuilding Transmitters

In addition to the "open house" for the public, the company also held a supper and dance for the employees in the Corning and Denison districts which include thirteen western Iowa towns. Several officials of the company from Kansas City were also present for the opening and remained for the evening festivities.

The new equipment comprises a Stromberg-Carlson three-position multiple switchboard with two positions equipped. It has 500 common battery local lines, 43 rural lines and 13 toll lines. It is equipped with universal feature cord circuits. A feature of the new board is that all numbers on the telephones of members of the Corning volunteer fire department are equipped with red lights and after a fire alarm sounds the operators have strict instructions to answer the red flashes in preference to all others.

The new exchange is in new quarters in the former Hogan Bank Building.

Automatic Electric Co. Acquires Sands Firm

H. L. Harris, president, Automatic Electric Co., Chicago, announces the acquisition of the business of the Sands Electric Co., formerly of North Chicago, by the former company.

The Sands Company was the manufacturer of a complete line of protective equipment which has been added to the line of protective apparatus of the Automatic Electric Co. R. G. Sands, president of the Sands Company has joined the staff of the Chicago company, taking charge of its facilities for the manufacture of protective equipment.

Gaines Joins Staff of Automatic Company

Earl L. Gaines, formerly traffic superintendent of the Home Telephone and Telegraph Co., Fort Wayne, Ind., recently joined the sales staff of American Automatic Electric Sales Co. Mr. Gaines will retain his residence at Fort Wayne but is making his business headquarters in Chicago at the office of the above company at 1033 West Van Buren St.

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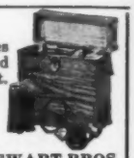
With balanced coil. Locates shorts, crosses, grounds and wet spots; also tone circuit.



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